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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,422	08/24/2001	Jonathan Bernstein	112.222.130	2822

23483 7590 09/11/2003

HALE AND DORR, LLP
60 STATE STREET
BOSTON, MA 02109

EXAMINER

MARTINEZ, JOSEPH P

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,422

Applicant(s)

BERNSTEIN ET AL.

Examiner

Joseph Martinez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-84 is/are pending in the application.
- 4a) Of the above claim(s) 46-55 and 76-80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45, 56-75 and 81-84 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-45, 56-75 and 81-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. (606447) in view of Laor et al. (6295154) in further view of Neukermans et al. (5648618).

Re claims 1, 12, 18, 23, 26, 27, 34, 35, 39, 42, 43, 56, 59, 67 and 69, Asada et al. teach for example, an array of electro-magnetically actuated MEMS devices, each device comprising: a mirror having a reflective surface (total reflecting mirror 8, fig. 14); a gimbal structure (first torsion bars 6A and second torsion bars 6B, fig. 14) for movably supporting said mirror about first and second axes; a first coil (coil 7A, fig. 10) on the mirror for causing selective movement of said mirror about the first axis in the presence of a magnetic field; and a second coil (coil 7B, fig. 10) on the mirror for causing selective movement of said mirror about the second axis in the presence of a magnetic field, an array of magnets (magnets 10A, 10B, 11A, 11B, 12A, 12B, 13A and 13B, fig. 14) positioned proximate said array of MEMS devices

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for applying the magnetic field, each magnet of said array being associated with one or more of said mirror devices (fig. 14), said array of magnets including magnets along each row of devices having a pole direction parallel to said substrate (col. 5, ln. 41-53), and magnets between each row of devices having a pole direction perpendicular to said substrate such that said devices are within a magnetic field produced by said array of magnets (col. 5, ln. 41-53) and a second coil on the gimbal frame (coil 7B, fig. 10), but fail to implicitly teach pairs of coils, said MEM device in a package, coils substantially filling the area of the mirror covered by the reflective surface and means for determining the angular deflection of said mirror about said axes. However within the same field of endeavor of MEM mirrors, Laor et al. teach for example, an MEM device in a package (micromirror assembly package 99, fig. 7) and pairs of magnets (magnets 53a and b, fig. 7a) on the mirror and it is well known in the art that permanent magnets and electromagnet coils are interchangeable as taught by Asada et al. (col. 11, ln. 9-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide pairs of electromagnetic coils since the permanent magnets and coils are equivalent for their use in the art of MEMs actuation and the selection of any of these known equivalents to magnets would be within the level of ordinary skill in the art. Furthermore, within the same field of endeavor, Neukermans et al. teach for example, coil (coil 151, fig. 7a) substantially filling the area of the mirror covered by the reflective surface (fig. 7a) and a feedback mechanism (torsion sensors 111 and 115, fig. 1, col. 8, ln. 21-32) for determining angular deflection of a mirror about an axis in a magnetically actuated mirror device, the mirror device including a pair of coils on the mirror for rotating the mirror about the axis, the feedback mechanism comprising an excitation coil and a detection circuit for sensing the relative proximity of said coils to said excitation coil driven with

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a high frequency current; and means for detecting a signal from said excitation coil at said actuation coils, said signal having a strength proportional to the relative proximity of said coils to said excitation coil (col. 8, ln. 21-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Asada et al. in view of Laor et al. in further view of Neukermans et al. in order to provide an electro-magnetically actuated MEMs device that does not require high voltages.

Re claims 2-11, 13-17, 19-22, 24-25, 28-33, 36-38, 40-41, 44-45, 57-58, 60-66, 68, 70-75 and 81-84, supra claims 1, 12, 18, 23, 26-27, 34, 35, 39, 43, 56, 59, 67 and 69, respectively. Asada et al. in view of Laor et al. in further view of Neukermans et al. teach the claimed invention as noted above. Claims 2-11, 13-17, 19-22, 24-25, 28-33, 60-66, 68, 70-75 and 81-84 are modifications that are well known in the art of MEMs and magnetic actuation and would have been obvious at the time the invention was made and therefore not given patentable weight.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Novotny (6483962) discloses a similar invention in figs. 11-13.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Martinez whose telephone number is 703-305-0577. The examiner can normally be reached on M-F 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4883.

JPM

A handwritten signature in black ink, appearing to read 'Hung Xuan Dang', with a stylized, flowing script.

Hung Xuan Dang
Primary Examiner